

Social Science support for the Water Management Program from a policy-down perspective.

[Twiss, March/April 2005]

One can think of their being two drivers for social-science work in science and adaptive management:

1. **Science-up.** New understandings from natural-science community:

“How can this be implemented in the CALFED agencies?” or,

2. **Policy-down.** Starts with key actions in the works:

“How can the best science-based information be injected, absorbed, and acted upon?”

This presentation focuses just on the Policy-down approach.

A focus starting from the “Policy-down” perspective might:

- Identify key upcoming water management **actions** with high stakes (from the ROD, MYPPs, DIP)
- Identify the **time** available for decision support (from MYPP schedules)
- Identify **roadblocks** due to uncertainty (from Conceptual Models -- if available)
- Identify likely sources of science-based advice (e.g.: “**founts of wisdom**”) that may be sought by managers and stakeholders.
- Characterize the **state of science** that would be needed to address these uncertainties, and research communities. (see Caricatures for the idea)
- Propose a science **strategy** to target upcoming actions where:
 - Stakes are high
 - Time is available for at least some augmentation
 - Uncertainties are admitted to (by managers, stakeholders); or can be foreseen and forcefully asserted by the science community
 - The characterization exercise identifies tools that can be directed at the uncertainties.

Note: this is at least in part the approach in use by the Science Program and ERP Strategic Plan

Selected actions from some Multi Year Program Plans

Water Mngt. Schedule overview R. Twiss edit, March 2005	2005	2006	2007	2008	2009	2010
STORAGE						
Storage MYPP						
SS - Shasta enlargement			12/07 DEIS	9/08 FEIS		
SS - N of Delta Off Stream	06/05 DEIS	06/06 FEIS				
SS - In Delta Storage	12/05 DEIS	6/06 FEIS				
SS - Los Vaqueros Expan		12/06 DEIS				
SS - Upper San Joaquin (Friant +)			12/07 DEIS	12/08 FEIS		
CONVEYANCE						
Conveyance MYPP						
S Delta Barrier Temp => Perm		11/06 Middle R.	11/07 Old R., Grantline			
S Delta Perm. Operable Barriers	7/05 FEIS			10/08 begin 8500 cfs		
Lower San Joaquin R. Flood	6/05 CE Auth			12/08 R. Mngt. Plan		
Old River & Rock Slough (DIP)	4/05 CC canal FEIS					
Delta Cross Channel (DIP)	11/05 Compl S.	1/06 Implement Rec.				
Through Delta Facility (DIP)	11/05 Compl S.		12/07 FEIS			
Delta Mendota/CA Aqueduct Intertie (DIP)	FEIS					
Clifton Ct. / Tracy PP Intertie	1/05 ---					thru 6/10
San Luis Reserv. Low point	5/05 FEIS					
Franks Tract (DIP)		2/06 DEIS	7/07 FEIS			
LEVEE SYSTEM INTEGRITY						
Levee Program Plan 7-04.pdf						
Delta Risk Management Strategy	Interim Policies	Risk Mngt. Scenarios	Implement changes	DEIS ?		
Other jpgs						
DIPoverview.jpg						
southdeltaimprbirdseye.jpg						
recirculationbirdseye.jpg						
upstreamsalt.jpg						
WQbird.jpg						

Characterization. We need to characterize the state of science that could address the uncertainties that confound the selection of actions.

What are the sources of uncertainty and disagreement? Is it:

- Lack of information? (e.g. Delta Smelt impacts)
- Failure to recognize information and to admit to policy implications? * (Delta subsidence, sea-level rise)
- Failure to scale actions to the level of uncertainty (e.g. AM)? *
- Failures in feedback to the management and policy response? *
- Weak interpretation of existing information? *
- Differing interpretations within or across disciplines?
- Selective use of data by agencies or stakeholders? *
- Lack of good conceptual models?
- Conflicting (Dueling) models?
- Prematurely strong interpretations and big decisions taken without strong science support? *
- Failure to confront uncertainty & risk *

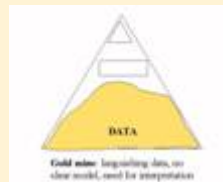
Social scientists can help prescribe responses to all of the above, especially those with *.

Characterization. To what extent is the science community really ready and able to provide solid, unequivocal advice? It is possible to characterize the state of science and its applications to policy and management? Some caricatures of alternative states are shown below; with each described briefly in subsequent slides.

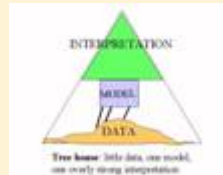
1. Great Pyramid



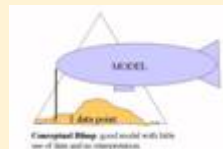
2. Gold Mine



3 Tree House



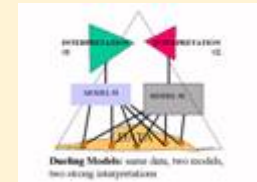
4. Conceptual Blimp



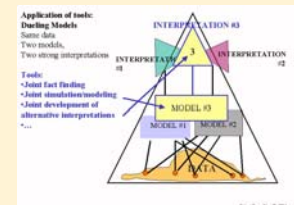
5. Cherry Picking



6. Dueling Models



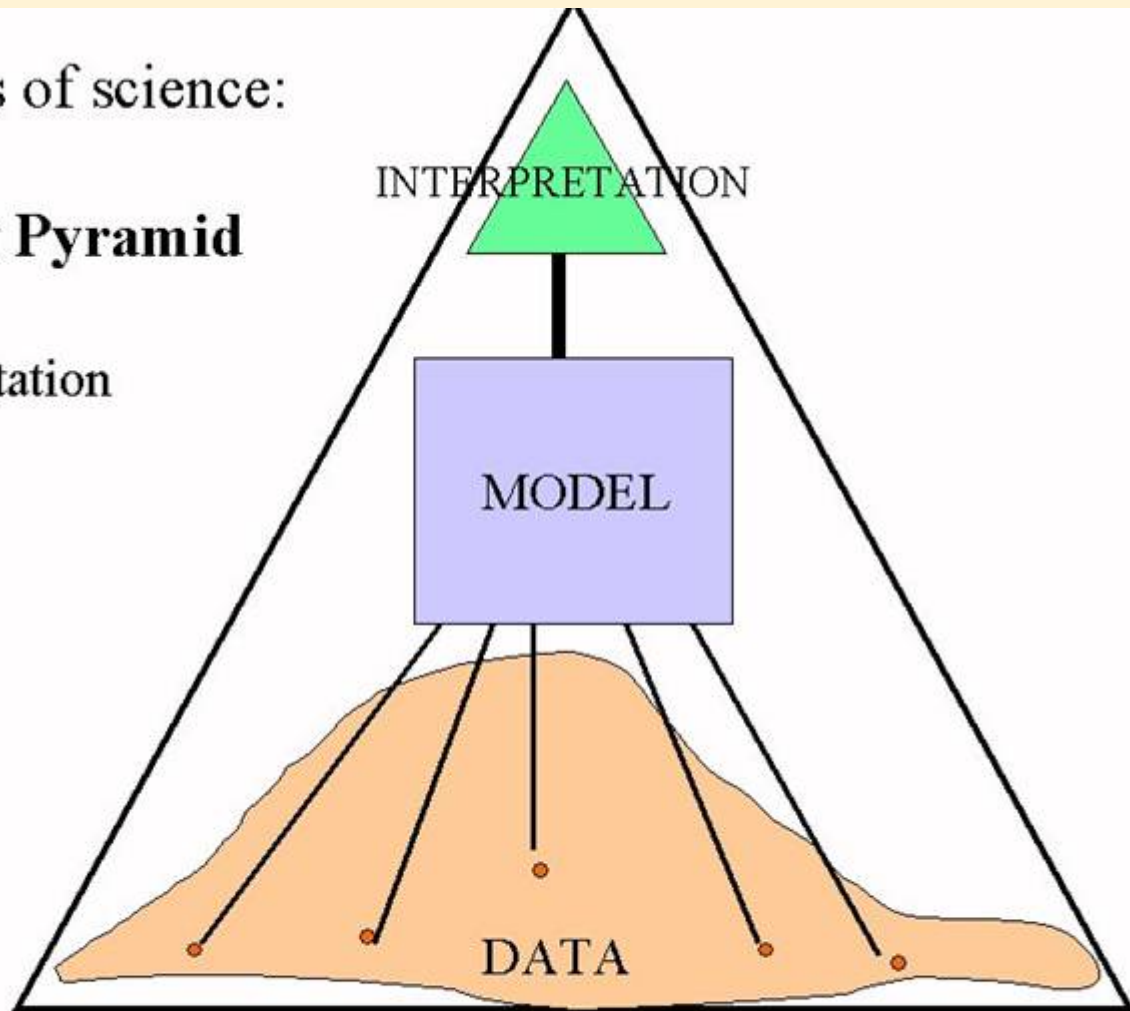
7. Some tools.



Caricatures of science:

The Great Pyramid

One interpretation
One model
Good data



Many managers and the public see science in this simple way, and may disregard science if it does not resemble this caricature.

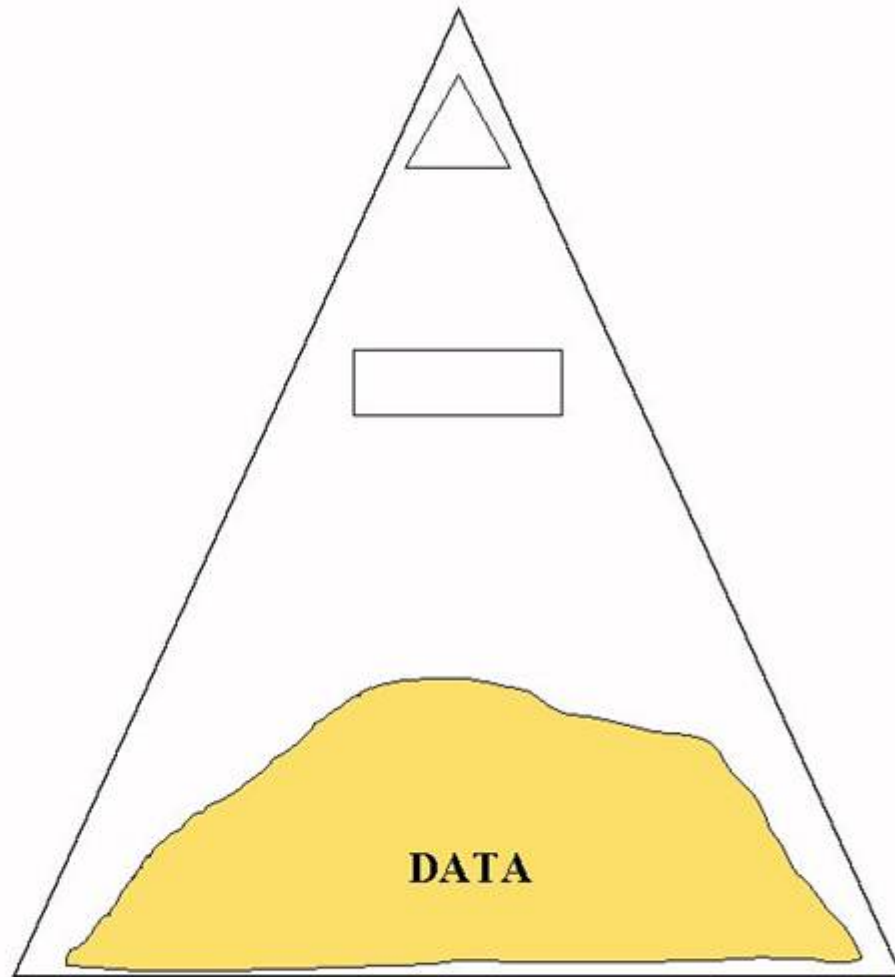
Robert Twiss May 27, 2004

Gold mine:

Languishing data,

No clear model

No interpretation



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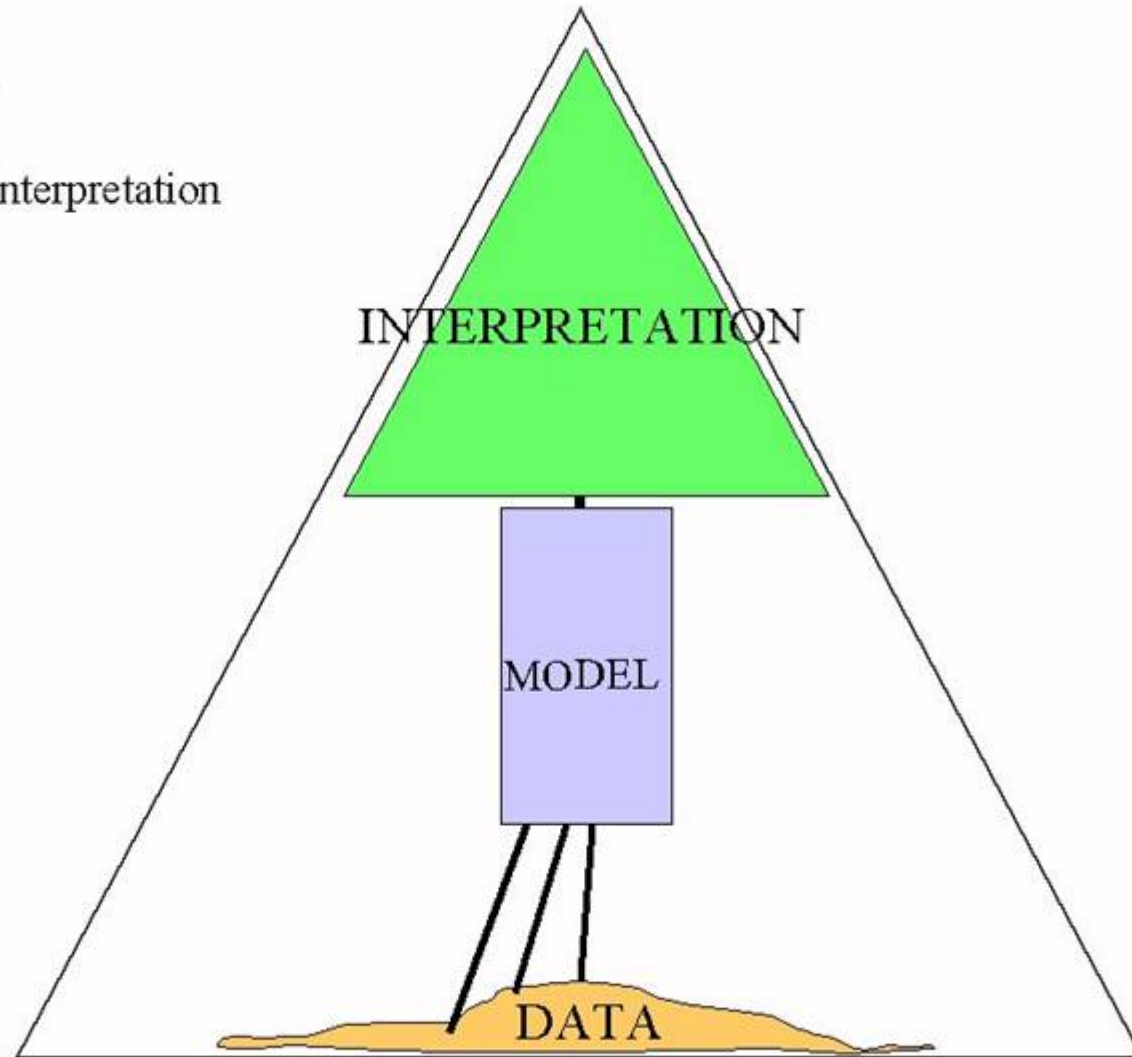
Some scientists see the long-term, Striped Bass survey data in this way

Tree house

One strong interpretation

One model

Little data



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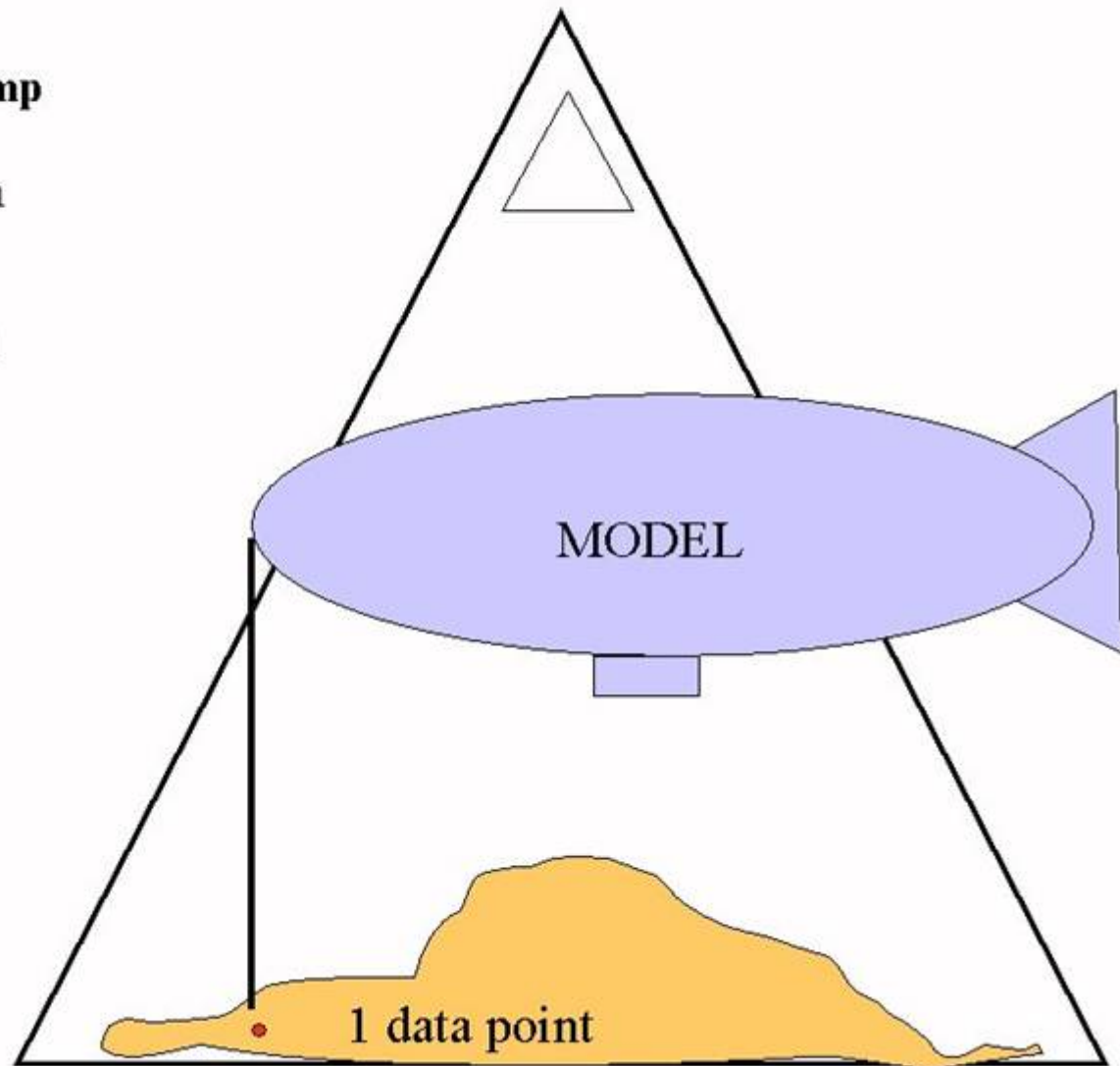
Some see the initial proposal for the Peripheral Canal as an example here.

Conceptual Blimp

No interpretation
possible

One great model

Little data



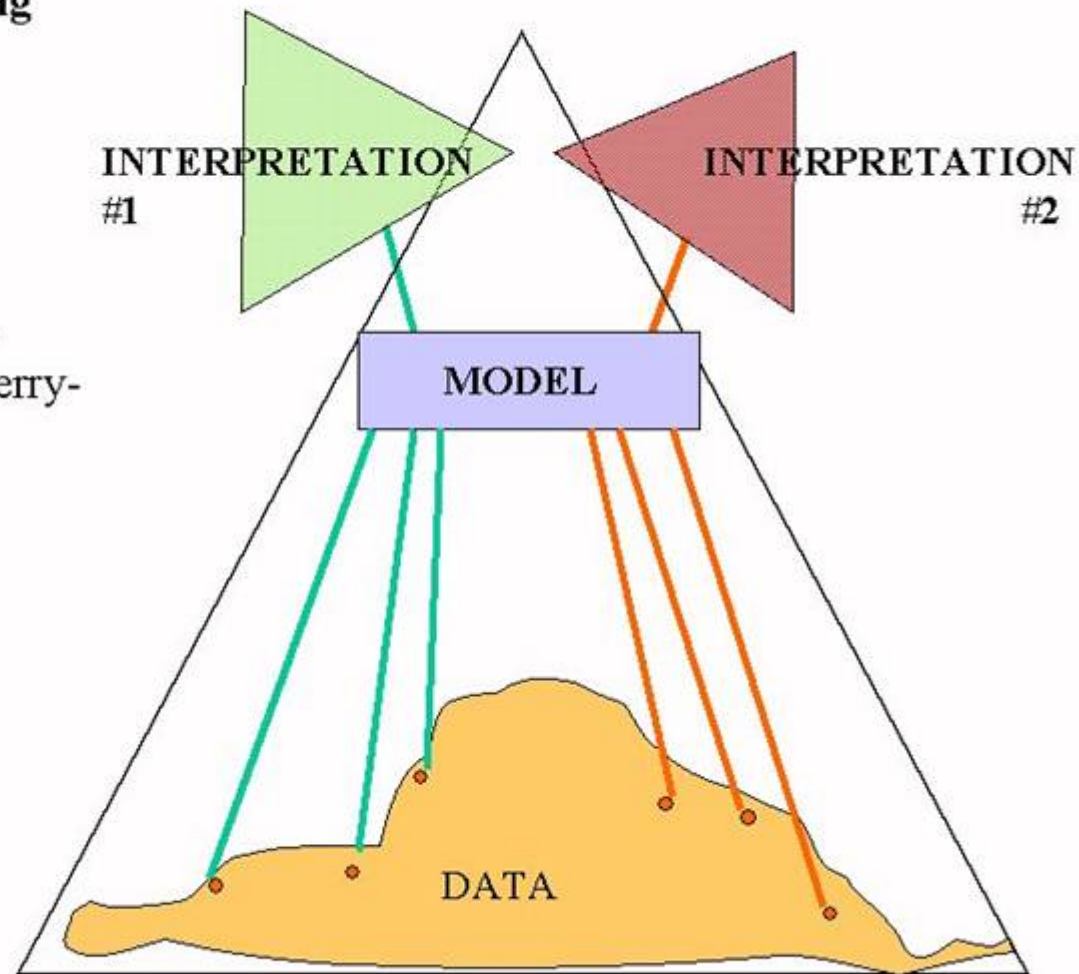
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The critically important life-cycle model for salmon looked like this last year; but work is underway to improve the situation.

Adversarial type 1: Cherry picking

Same data set
Same model

Two strong
interpretations
based upon cherry-
picking data.



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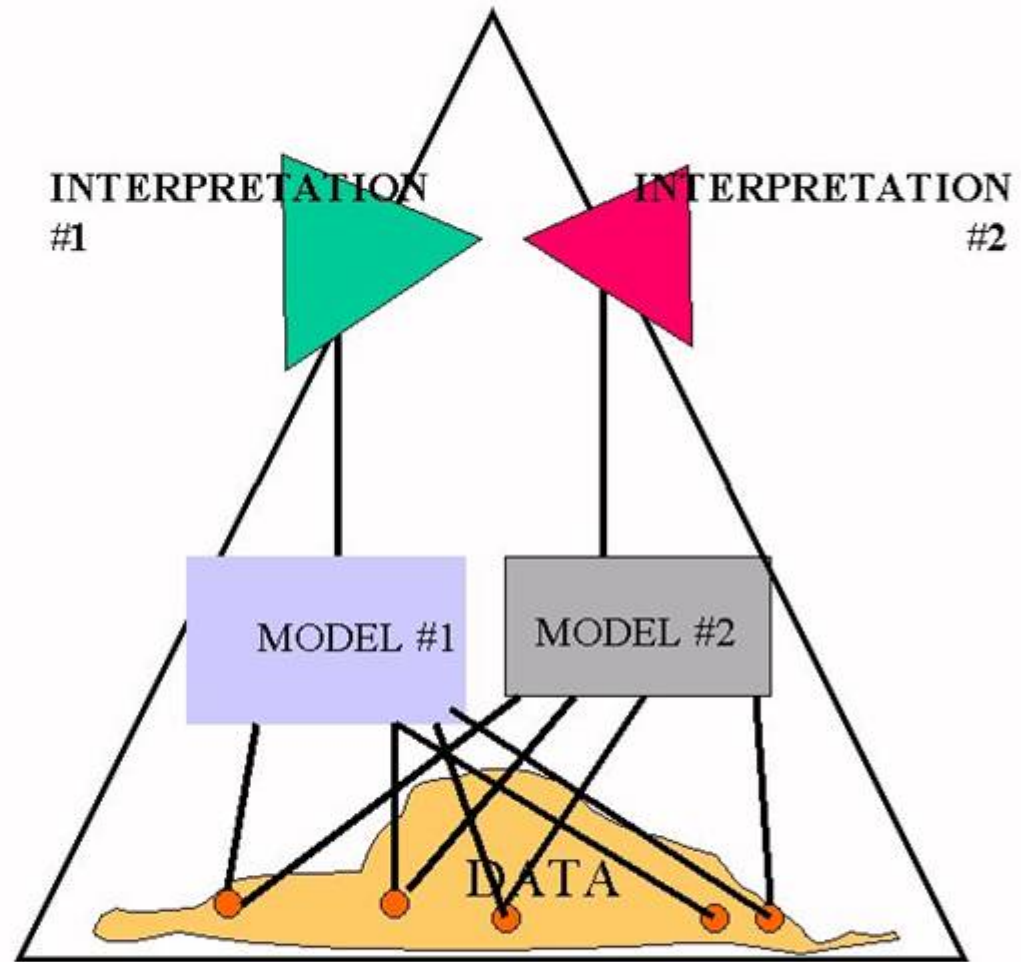
The typical case in litigation -- what CALFED is set up to avoid

Adversarial type 2: Duelling Models

Same data

Two models

Two interpretations



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Some examples in global climate change, but not sure if we have this situation in CALFED planning.

Some tools for marshalling scientific input:

- Conferences, workshops & symposia to daylight the current state of knowledge *
- Delphi-like formal processes to sharpen expert opinion
- Design studios to develop alternative scenarios & projects
- Simulation/modeling development & exercises
- Joint fact finding with agencies and stakeholders
- Truncated, firehouse EIS (informal vetting by experts) *
- Formal panel of experts *
- Data mining, modeling and analysis
- Clinical trials
- Pilot studies *

* In use now

Application of tools:

Dueling Models

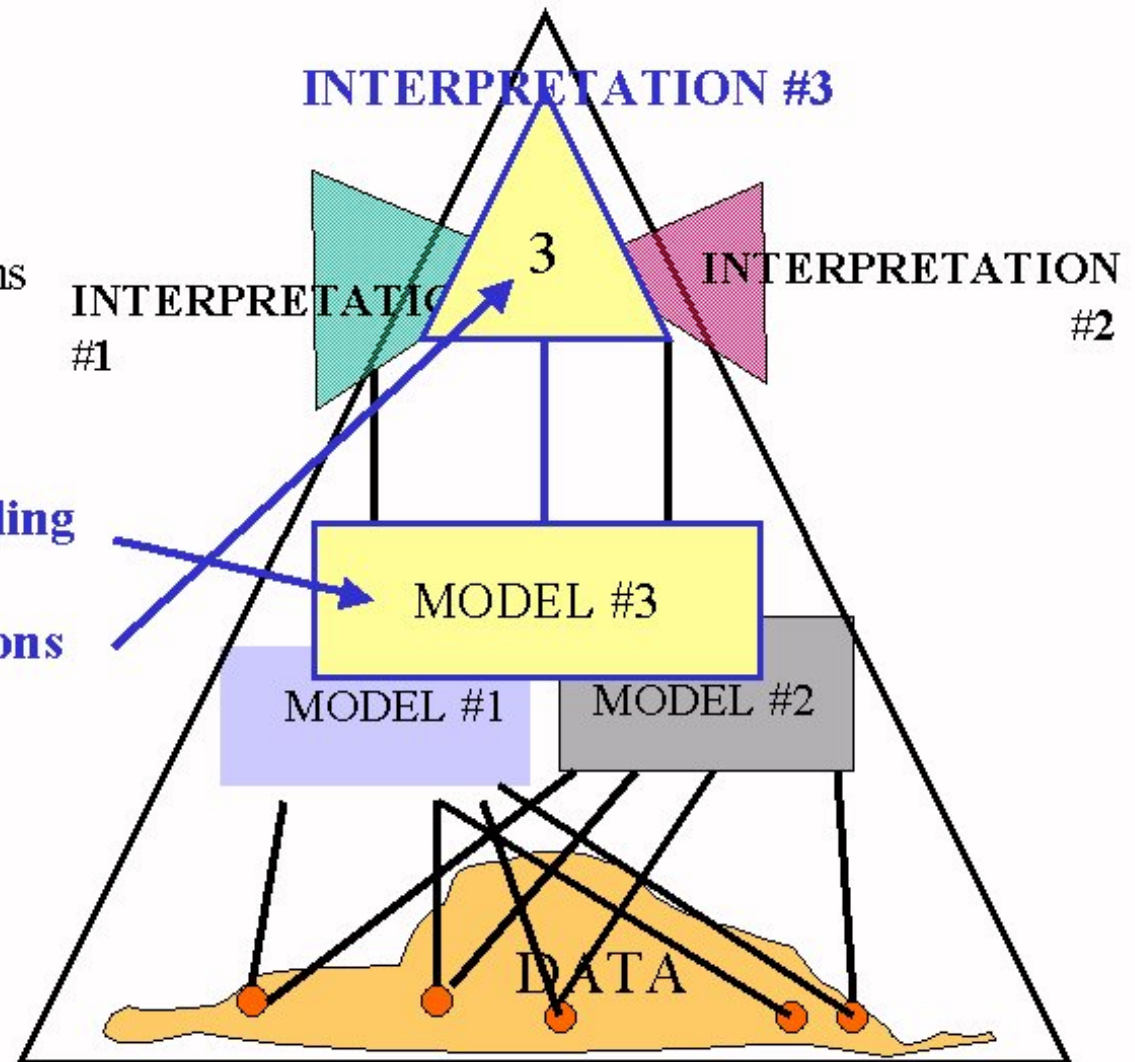
Same data

Two models,

Two strong interpretations

Tools:

- Joint fact finding
- Joint simulation/modeling
- Joint development of alternative interpretations
- ...



Next steps in Water Management?

- Clarify and prioritize key actions for inquiry [follow-up on briefings received thus far]:
- Clarify time lines and realistic opportunities for injection of information and understandings [not yet very clear]
- Characterize (e.g.: which caricature?) [not yet done formally]
- Work with the Deputy Director and Lead Scientist to explore options for science support. [note: there is a lot of good work in natural science and engineering that is planned or underway, but the institutional and professional aspects are not so fully addressed].
- Pilot study of administrative process focused on a selected issue, with the goal of testing and recommending tools.
- More ideas needed